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WHAT IS CLAIMED IS:

1. An object-based coding apparatus for image signals, comprising:

5   a shape information coding part for encoding shape information of an input image signal;

a shape-adaptive transform part for carrying out a shape-adaptive transform for texture information of said input image signal, based on said shape information outputted from said shape

10 information coding part; *having an output transform coefficient distribution signal*

a shape-adaptive scan control part for forming a binary coefficient mask having ~~the~~ *said* same transform coefficient distribution as that of ~~an~~ *said* output signal from said shape-adaptive transform part, and generating a scan control signal in

15 accordance with existence or nonexistence of a transform coefficient based on said binary coefficient mask; and

a shape-adaptive scanning part for carrying out a scanning operation for an output from said shape-adaptive transform part, based on the associated control signal from said shape-adaptive

20 scan control part.

2. The object-based coding apparatus for image signals

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in accordance with Claim 1, wherein said shape-adaptive scan control part comprises:

a coefficient forming unit adapted to form a binary coefficient mask for sorting segments containing transform coefficients from.

5 segments containing no transform coefficient which has the same /said transform coefficient distribution as that of an /said output signal from said shape-adaptive transform part/ and

a control signal generation unit adapted to generate a skip signal for skipping segments containing no transform coefficient

10 from the scanning operation of said shape-adaptive scanning part.

3. The object-based coding apparatus for image signals in accordance with Claim 2, wherein said shape-adaptive scanning

15 part is configured to carry out a scanning operation for transform coefficients, based on said skip signal from said control signal generation unit, while skipping segments containing no transform coefficient.

20 4. The object-based coding apparatus for image signals in accordance with Claim 2, wherein said shape-adaptive scanning part comprises:

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a scanning unit adapted to scan the entire segment including

segments containing shape-adaptive transform coefficients and

segments containing no transform coefficient, but respectively

filled with coefficients of a predetermined value; and

5   a switching unit adapted to receive an output signal from

said scanning unit and to switch off said output signal from said

scanning unit, based on said skip signal from said control signal

generation unit, when said output signal is associated with a

segment containing no transform coefficient.

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5. The object-based coding apparatus for image signals

in accordance with Claim 1, wherein said shape-adaptive scanning

part is a zig-zag scan type shape-adaptive scanning part.

15   6. The object-based coding apparatus for image signals in

accordance with Claim 1, wherein said shape-adaptive scanning

part is an alternate scan type shape-adaptive scanning part.

7. The object-based coding apparatus for image signals in

20   accordance with Claim 1, further comprising:

a quantization part provided between said shape-adaptive

transform part and said shape-adaptive scanning part and adapted

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to quantize transform coefficients outputted from said shape-adaptive transform part; and

a variable-length coding part provided to an output stage of said shape-adaptive scanning part and adapted to perform a

5   variable-length coding operation in accordance with a generation probability of transform coefficients generated in said scanning operation.

8. An object-based coding method for image signals carried

10   out in an object-based image signal coding apparatus including texture signal encoding part comprising a shape-adaptive transform part adapted to perform a shape-adaptive transform for texture information of an input image signal, based on shape information of object said input image signal, *along with a having an output transform a coefficient distribution, signal*

15   shape-adaptive scan control part and a shape-adaptive scanning part, comprising the steps of:

forming, in said shape-adaptive scan control part and based on said shape information, a binary coefficient mask having a transform coefficient region with the *said* same transform coefficient

20   distribution as that of an *said* output signal from said shape-adaptive transform part and sorting segments containing transform coefficients from segments containing no transform coefficients,

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thereby generating a binary coefficient mask value; and

performing a scanning operation of said shape-adaptive

scanning part for a transform coefficient outputted from said

shape-adaptive transform part, based on said binary coefficient

5   mask value associated with said transform coefficient. *existence or none existence of*

9. An object-based decoding apparatus for image signals,

comprising:

a shape information decoding part for decoding shape

10   information associated with objects and contained in an object

bitstream transmitted from a coding apparatus;

a shape-adaptive inverse scan control part for forming a

binary coefficient mask, based on said shape information

received from said shape information decoding part, and

15   generating an inverse scan control signal in accordance with

existence or nonexistence of the coefficient mask;

a shape-adaptive inverse scanning part for performing an

inverse scanning operation to arrange transform coefficients of

texture information contained in said object bitstream in the

20   form of a two-dimensional signal, based on said inverse scan

control signal from said shape-adaptive inverse scan control

part; and

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a shape-adaptive inverse transform part for performing a

shape-adaptive inverse transform for the transform coefficients

inversely scanned by said shape-adaptive inverse scanning part,

based on said decoded shape information outputted from said shape

5   information decoding part, thereby reconstructing texture

information of an original image.

10. The object-based decoding apparatus for image signals

in accordance with Claim 9, wherein said shape-adaptive inverse

10   scan control part comprises:

a binary coefficient mask forming unit adapted to receive

said reconstructed shape information from said shape information

decoding part and to form a shape-adaptive transform binary

coefficient mask for sorting segments containing transform

15   coefficients from segments containing no transform coefficient;

and

a control signal generation unit adapted to generate a skip

signal for skipping segments containing no transform coefficient

from a scan order in the scanning operation of said shape-adaptive

20   inverse scanning part.

11. The object-based decoding apparatus for image signals

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in accordance with Claim 10, wherein said shape-adaptive inverse

scanning part is configured to carry out an inverse scanning

operation for transform coefficients, based on said skip signal

from said control signal generation unit, while skipping

5   segments containing no transform coefficient.

12. The object-based decoding apparatus for image signals

in accordance with Claim 10, wherein said shape-adaptive inverse

scanning part comprises:

10   a switching unit adapted to receive transform coefficients

of texture information contained in said object bitstream and to

switch off said output signal from said inverse scanning unit,

based on said skip signal from said control signal generation unit,

when said output signal is associated with a segment containing

15   no transform coefficient; and

an inverse scanning unit adapted to scan the entire segment

including segments containing shape-adaptive transform

coefficients and segments containing no transform coefficient,

but respectively filled with coefficients of a predetermined

20   value.

13. The object-based decoding apparatus for image signals

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in accordance with Claim 9, wherein said shape-adaptive inverse
scanning part is a zig-zag scan type shape-adaptive inverse
scanning part.

5   14. The object-based decoding apparatus for image signals
in accordance with Claim 9, wherein said shape-adaptive inverse
scanning part is an alternate scan type shape-adaptive inverse
scanning part.

10   15. The object-based decoding apparatus for image signals
in accordance with Claim 9, further comprising:

        a variable-length decoding part provided in front of an
input stage of said shape-adaptive inverse scanning part and
adapted to receive said texture information contained in said
15 object bitstream, thereby outputting transform coefficients
arranged in a one-dimensional array; and

        a dequantization part provided between said shape-adaptive
inverse scanning part and said shape-adaptive inverse transform
part and adapted to dequantize said inversely-scanned transform
20 coefficients.

        16. An object-based decoding method for image signals

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carried out in an object-based image signal decoding apparatus including texture information decoding means comprising a shape-adaptive inverse scanning control part, a shape-adaptive inverse scanning part and a shape-adaptive inverse transform

5   part adapted to perform a shape-adaptive transform for texture information of an input image signal, based on shape information of object of said input image signal, comprising the steps of:

forming, in said shape-adaptive inverse scan control part and based on said shape information, a binary coefficient mask

10   adapted to sort segments containing transform coefficients associated with said objects from segments containing no transform coefficient, thereby generating a binary coefficient mask value for each of the segments; and

performing an inverse scanning operation of said shape-

15   adaptive scanning part, for a transform coefficient outputted from said shape-adaptive transform part, carried out to arrange transform coefficients of said object bitstream in the form of a two-dimensional signal, in accordance with the existence or nonexistence of said binary coefficient mask value associated

20   with said coefficient mask.

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